

# Calibrators – The $h(t)$ group

## Xavier Siemens

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Mission: To study and validate  $h(t)$ , present case to review committee, work on  $h(t)$  methods

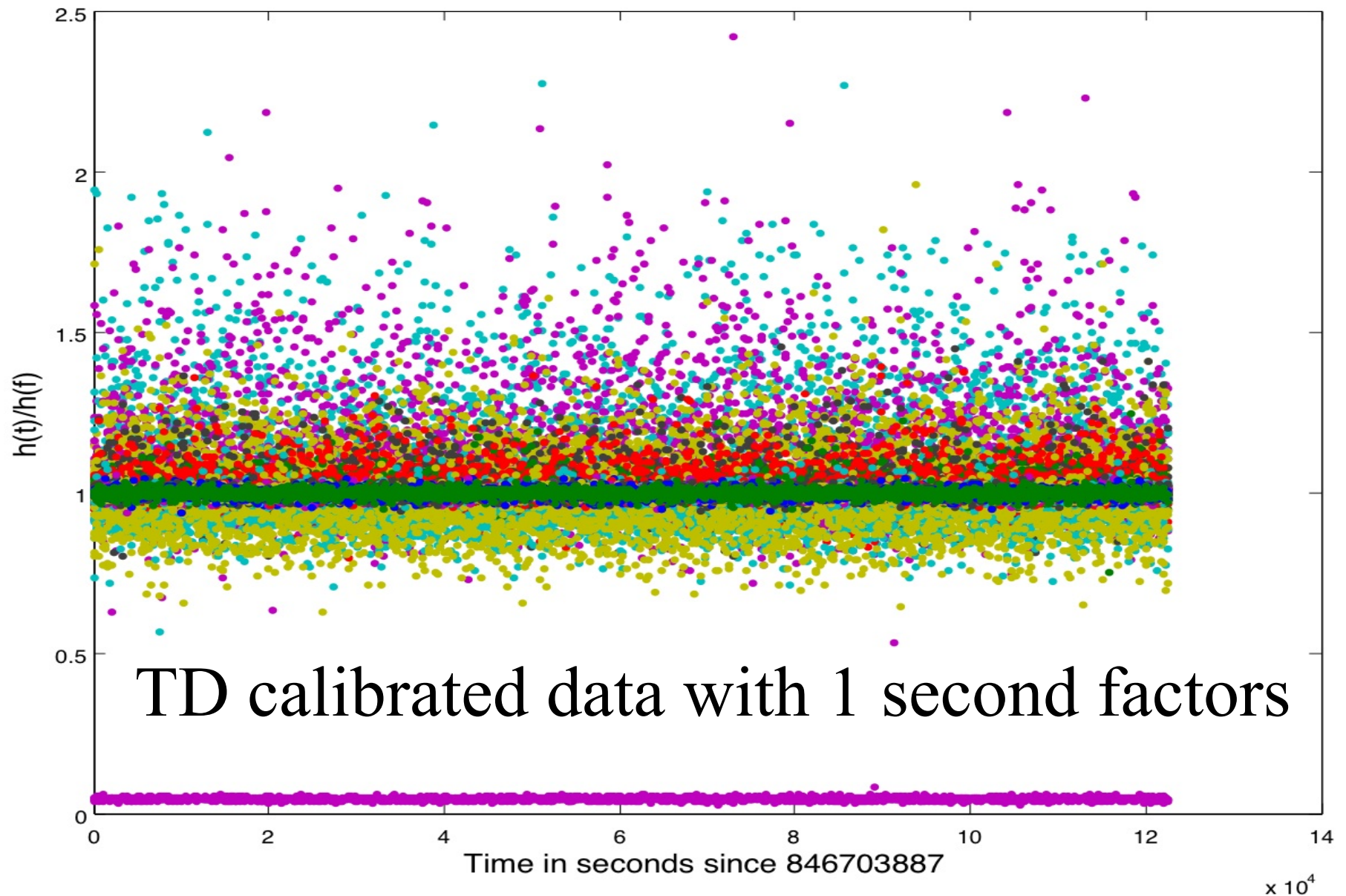
# Calibrators V3 $h(t)$ work

Main tool is a noise comparison code that looks at many small bands of noise in FD calibrated DARM\_ERR and compares it to noise in  $h(t)$ .  
(Joe Betzwiezer, Amber Stuver, Chad Hanna?)

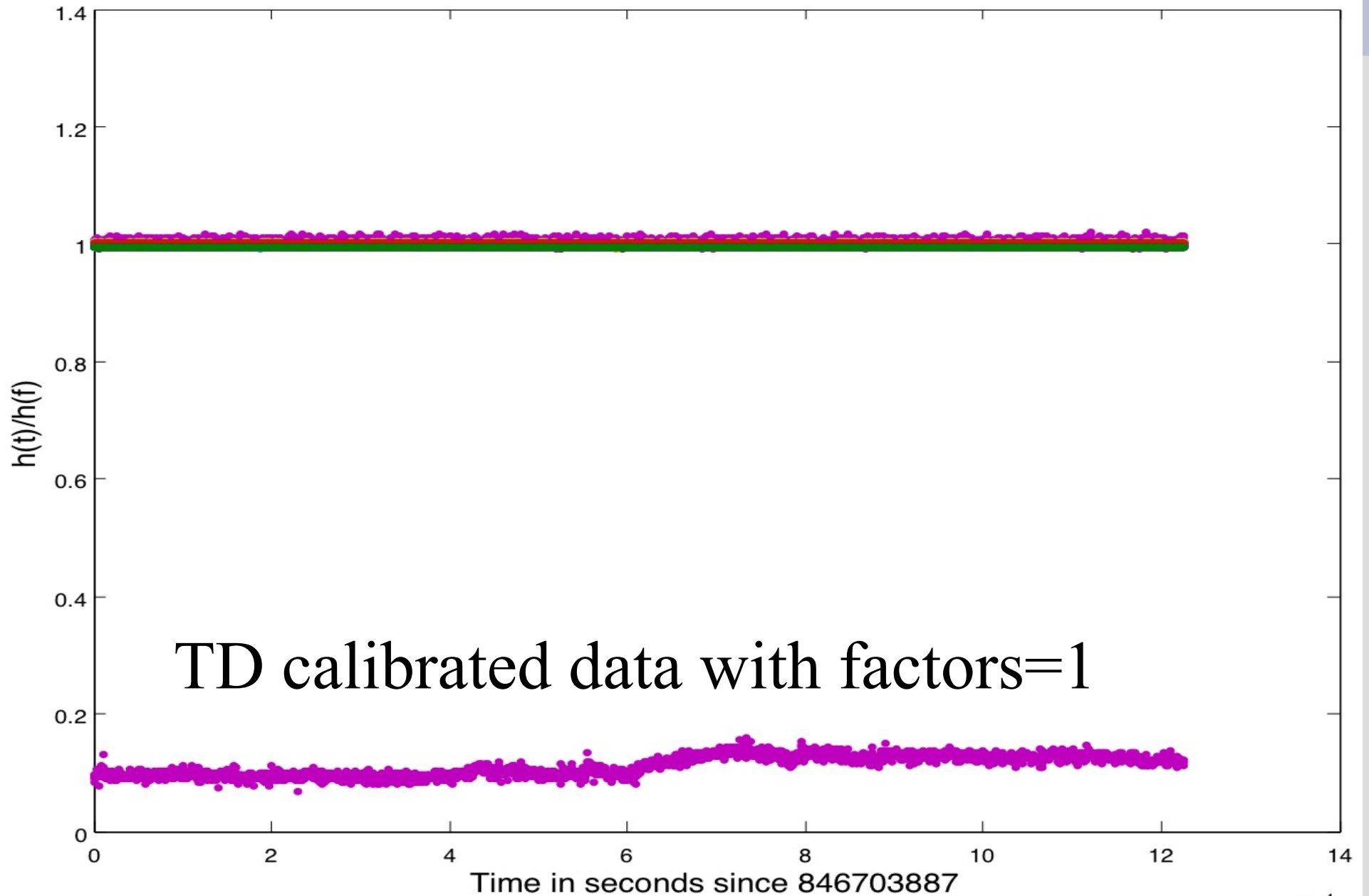
Other main effort is a look at hardware injections and comparison of recovered injection parameters between  $h(t)$  and FD calibrated DARM\_ERR.  
(Philip Charlton, Brennan Hughey, Matt Pitkin Anand Sengupta, Myungkee Sung)

# Some urgent issues

Differences between  $h(t)$  and FD calibrated DARM\_ERR near lines (on 60s timescales).



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Findings thus far:

Use of 1s factors causes differences between Fourier transforms of  $h(t)$  and FD calibrated DARM\_ERR near lines. This effect could be real, i.e.  $h(t)$  more accurate representation. We don't know yet though—may point to a problem.

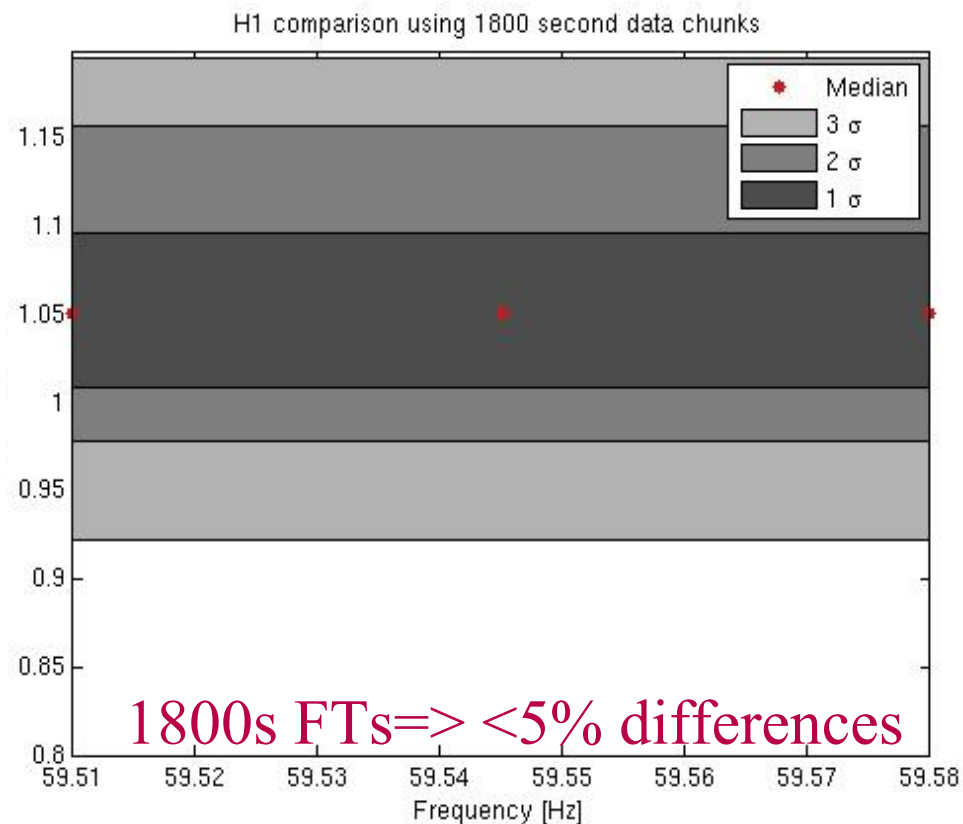
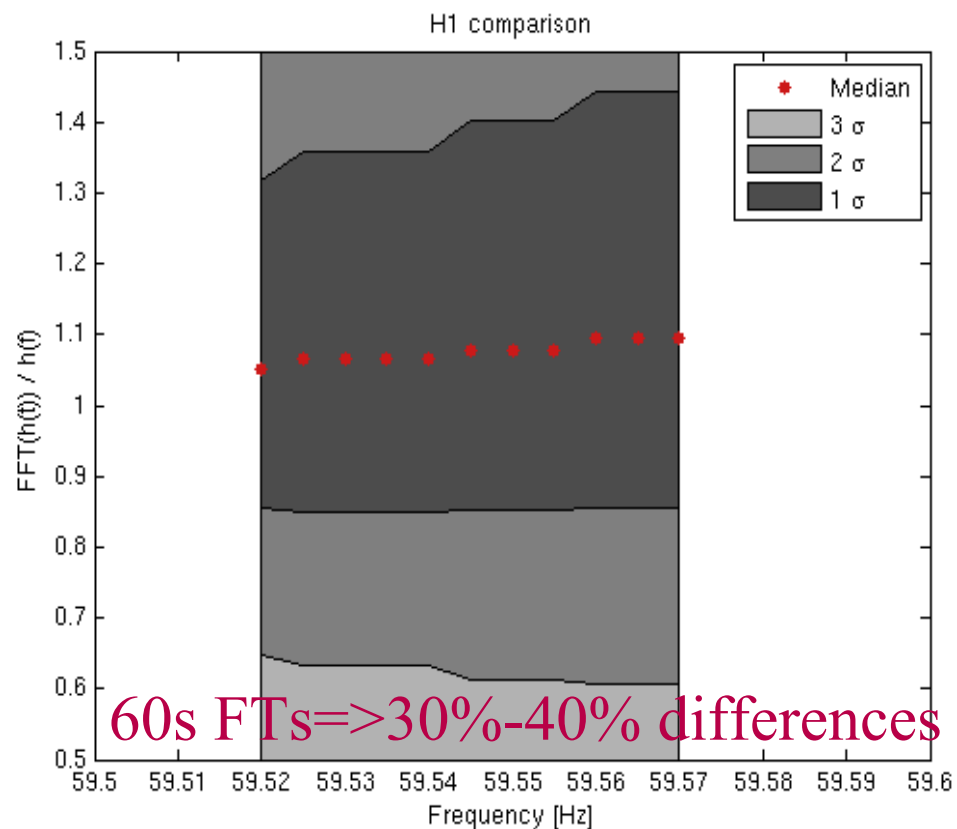
But we were worried about Crab search...

**Matt Pitkin:** Finds similar problem when applying 1s factors to DARM\_ERR -> not an  $h(t)$  generation issue.

**Amber Stuver:** Has taken spectra of factors to look for features that would generate sidebands. Nothing obviously there. Still looking.

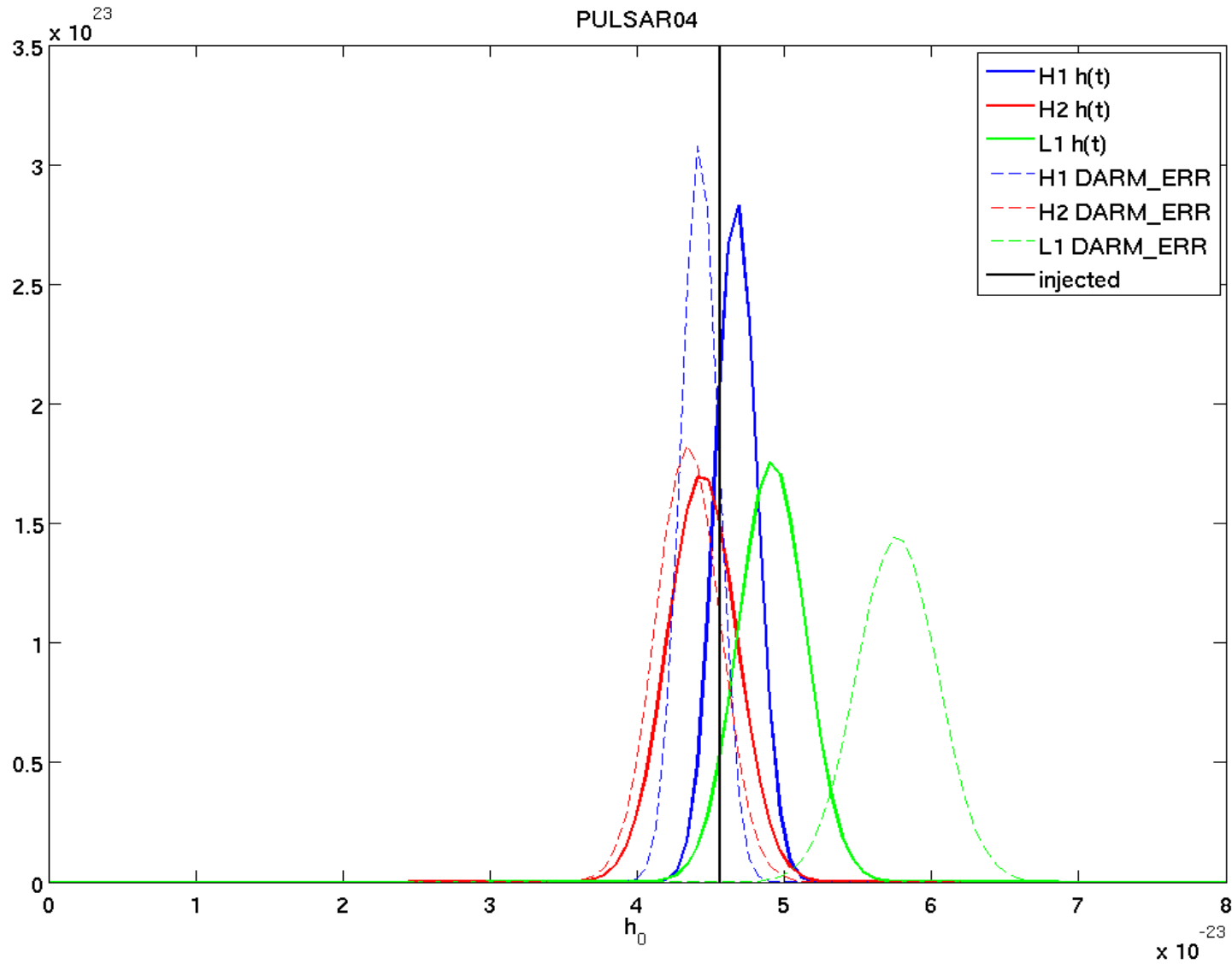
Findings thus far:

**Joe Betzwiezer:** Usual comparisons use 60s Fourier transforms but Crab analysis (and most pulsar group) analysis uses 1800s Fourier transforms. Preliminary look indicates effect becomes something we can live with (rather nicely):



# Injections:

**Matt Pitkin (Pulsars):** Quick look at injections in  $h(t)$  and DARM\_ERR. 2 days of data from the s5try3 injection period. Injections look better in  $h(t)$ . Probably a coincidence.



## Brennan Hughey & Myungkee Sung (Bursts):

Started to look at burst hardware injections.

Preliminary look seems OK. Nothing glaring.

## Anand Sengupta (Inspirals):

Compiling existing data from CBC group.

**Philip Charlton? (Stochastic):** No injection analysis going on. Doing some stochasticky noise comparisons

Spirit: To understand the effect of  $h(t)$  calibration procedure on the signal. Will not pursue injection outliers if they're seen in DARM\_ERR as well. Only looking for differences between TD and FD calibrations.



# Summary

A lot more work going on by Calibrators than I've mentioned.

Generally: Will work to make a case to the review committee with validations and error recommendations for V3  $h(t)$  ~1 month. Huge amount of data to be checked over.

Back and forth with review committee ~1 month

Slightly optimistic estimate time to V3 completion  
~2 months

V4 1-2 months after FD calibration is released